



SHILAP Revista de Lepidopterología

ISSN: 0300-5267

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Sociedad Hispano-Luso-Americana de  
Lepidopterología  
España

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*ustyurtensis* Nupponen, sp. n. from Kazakhstan (Lepidoptera: Gelechioidea, Elachistidae)

SHILAP Revista de Lepidopterología, vol. 43, núm. 169, marzo, 2015, pp. 125-131

Sociedad Hispano-Luso-Americana de Lepidopterología  
Madrid, España

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# Interesting records of Ethmiinae from the former USSR, with description of *Ethmia ustyurtensis* Nupponen, sp. n. from Kazakhstan (Lepidoptera: Gelechioidea, Elachistidae)

K. Nupponen

## Abstract

*Ethmia ustyurtensis* Nupponen, sp. n. is described on the basis of nine specimens from the Ustyurt range, Southwestern Kazakhstan. Faunistically significant records of thirteen little known species of the subfamily Ethmiinae from the former USSR are provided, with notes on their bionomy. *E. zaguljaevi* Kostjuk, 1980 is reported as new to Europe from the Ural Mountains.

KEY WORDS: Lepidoptera, Elachistidae, Ethmiinae, new species, noteworthy records, Russia.

**Interesantes registros de Ethmiinae de la antigua URSS, con descripción de *Ethmia ustyurtensis***

**Nupponen, sp. n. de Kazajistán  
(Lepidoptera: Gelechioidea, Elachistidae)**

## Resumen

Se describe *Ethmia ustyurtensis* Nupponen, sp. n. sobre la base de nueve ejemplares de las montañas Ustyurt, sudoeste de Kazajistán. Se proporcionan registros significativos desde un punto de vista faunístico de trece especies poco conocidas de la subfamilia Ethmiinae de la antigua URSS, con notas sobre su bionomía. *E. zaguljaevi* Kostjuk, 1980 se cita como nueva para Europa de los Montes Urales.

PALABRAS CLAVE: Lepidoptera, Elachistidae, Ethmiinae, nueva especie, registros notables, Rusia.

## Introduction

In May 2011, I explored Southern Ustyurt range (Western Kazakhstan) with my Russian colleagues Pavel Gorbunov and Alexander Ivanov. In the Ustyurt Nature Reserve I collected a series of a small white *Ethmia* species reminiscent of *E. alba* (Amsel, 1949). The DNA analysis and dissection of the Kazakh taxon revealed that it is not conspecific with *E. alba*, but is its allopatric sibling species and new to science. The new species is described in the present article.

Since the review of Palaearctic Ethmiinae (SÄTTLER, 1967), the family has been studied quite intensively. Several new species were described mainly from the territory of the former USSR and China, and new data on the distribution ranges of many species were provided. The published data on Ethmiinae from the former USSR since the early 1970's were recently summarized by SHOYKOON (2010a). In the present article, some additional faunistically significant new records from Russia and adjacent territories are reported, with notes on the bionomy of recorded species.

## Material and methods

The material originates from the former USSR: Russia (S Ural, Altai Mts., S Buryatia), W Kazakhstan and Uzbekistan. Most of the specimens resulted from field work by Kari and Timo Nupponen between 2000-2011. Risto Haverinen assisted in the field work in Uzbekistan. The majority of the Russian specimens were collected by sweeping and netting in during the day, while those from Kazakhstan and Uzbekistan came to artificial light at night. The collected material is generally deposited in the research collection of the author.

## List of recorded species

The species are listed following the systematics used by SATTLER (1967). Data on the geographical range of the species are from DUBATOLOV (2014), DUBATOLOV *et al.* (2014), KUN (2002, 2007, 2013), SATTLER (1967), SINEV (2008) and SHOVKOON (2010a).

### *Ethmia ustyurtensis* Nupponen, sp. n.

Type material: Holotype: ♂ (Fig. 1): SW-Kazakhstan, 43° 24' 27" N 54° 33' 34" E, 80 m a.s.l., Ustyurt Nature Reserve, Mametkazgan, 22-V-2011, K. Nupponen leg. In coll. T. & K. Nupponen. Paratypes (4 ♂♂, 4 ♀♀) (Fig. 2): Idem, 3 ♂♂, 4 ♀♀; SW-Kazakhstan, 43° 07' 07" N 54° 11' 33" E, 85 m a.s.l., Akkuduk village 20 km N, Karynzhyrk sands, Tynyshtyk, 23-V-2011, 1 ♂, K. Nupponen leg. Genitalia slides: K. Nupponen prep. no. 1/12-I-2014 (♂), 1/18-I-2014 (♀), 1/27-I-2014 (♂). DNA samples (Lepid. Phyl., green labels): KN00248 (♂), KN00249 (♀). In coll. T. & K. Nupponen.

Description: Wingspan 10-11 mm. Head, collar, neck tuft, thorax, tegula and haustellum white. Proboscis very long. Scape white with large scale tuft. Flagellum half length of forewing, pale fuscous, filiform. Labial palp white, very short, segment I with long downward directed scales. Legs: femur and tarsus pale beige; tibia cream white with two proximal and two distal spurs. Abdomen pale beige, shallowly lustrous. Forewing evenly white without markings. Hindwing white, slightly lustrous; cilia line narrow and indistinct, pale fuscous.

Male genitalia (Fig. 3): Uncus wide, hood-shaped, apically bifurcate. Gnathos a large subquadrangular plate, shorter than uncus. Phallus 0.6 x length of valva, basally curved about 90°, cornuti absent. Labis short, subtriangular, bristled. Vinculum broad and short, semicircular. Valva broad, rectangular; cucullus prominent, quadrangular, covered by stout spines.

Female genitalia (Figs. 4-5): Ostium small and round, ventral margin with small semicircular sclerotization. Antrum weakly sclerotized. Ductus bursae long and narrow, spiral. Bursa roundish; signum an elongated subrectangular plate with narrow longitudinal ridge. Posterior and anterior margins of sternum VIII medially deeply incurved; posterior margin with two weakly sclerotized U-shaped incisions. Ovipositor conical and long. Apophyses posteriores very long, about 2.5 times longer than diameter of segment VIII. Apophyses anteriores reduced.

Diagnosis: *Ethmia ustyurtensis* Nupponen, sp. n. is an allopatric sibling species of *E. alba* (Amsel, 1949). Externally the two species are similar to each other, and examination of the genitalia is needed for strict determination. In the male genitalia of *E. ustyurtensis*, the gnathos doesn't reach the apex of the uncus, the apical lobes of the uncus are large, and the cucullus is prominent and quadrangular (in *E. alba* the gnathos distinctly exceeds apex of the uncus, apical margin of the uncus is medially slightly cut, and the cucullus is short and slightly swollen). In the female genitalia of *E. ustyurtensis*, posterior and anterior margins of sternum VIII are medially deeply incurved (in *E. alba* widely concave), and the signum is large with a longitudinal sclerotized ridge (in *E. alba* the signum is distinctly smaller with a sharp extension). The two species can be separated by the DNA barcodes as well (see Remarks).

Bionomy: The moths came to artificial light at night. The habitats are calcareous deserts with sparse vegetation (Fig. 6).

Distribution: SW Kazakhstan. Only known from two localities in the southern Ustyurt range.

Etymology: The name of the species refers to its geographical origin.

Remarks: *E. ustyurtensis* Nupponen, sp. n. belongs to the *distigmatella* species-group (see SATTLER, 1967; SHOVKOON, 2010a). The species is readily separated by the external appearance from all other known taxa of the genus except *E. alba*. The DNA barcode sequence (COI) of two specimens was analysed to ensure that the new taxon is separable from *E. alba*. The two DNA barcodes of *E. ustyurtensis* are identical to each other, with a genetic distance (minimum pairwise distance, Kimura 2 Parameter) of 2.32 % to *E. alba* (from UAE, the Arabian Peninsula). *E. ustyurtensis* and *E. alba* are allopatric species. *E. alba* is known from Egypt, UAE and SW Iran, and the nearest collecting site in Ahwaz (SW Iran, prov. Khuzistan (see SATTLER, 1967)) is located about 1400 km to the south from collecting site of *E. ustyurtensis* in the Ustyurt range, beyond the mountain range of Kopet Dag. Furthermore, the Ustyurt range has repeatedly been geographically isolated for long periods during various transgressions of the Caspian Sea (SHOVKOON, 2010b), which, in all likelihood, has supported speciation.

*Ethmia falkovitshi* Shovkoon, 2010

Uzbekistan, 40° 45' N 63° 47' E, 404 m a.s.l., Buchara district, Kuldchuktau Mts., Churuk village 7 km N, 3-V-2008, 1 ♂, K. Nupponen & R. Haverinen leg.; Uzbekistan, 40° 34' N 64° 07' E, 195 m a.s.l., Buchara district, Turt Kuduk village 20 km SW, 3-V-2008, 1 ♂, K. Nupponen & R. Haverinen leg.

Distribution: W Kazakhstan, Uzbekistan.

Remark: The moths came to artificial light at night.

*Ethmia candidella* (Alphéraky, 1908)

Russia, S Ural, 50° 40-41' N 54° 27-28' E, 170-230 m a.s.l., Orenburg district, Pokrovka village 20 km S, Schibendy valley, 31-VIII-2000, 1 ♀, K. Nupponen leg.; Russia, S Ural, 51° 15' N 58° 08' E, 340 m a.s.l., Orenburg district, Orsk 40 km W, near Guberlja village, 9-IX-2009, 1 ♀, K. Nupponen leg.; Russia, S Ural, 51° 26' N 57° 26' E, 250 m a.s.l., Orenburg district, Kuvandyk village 12 km SE, 2-IX-2000, 1 ♀, K. Nupponen leg.

Distribution: N Africa, S. & C. Europe, Turkey, Near East, Transcaucasia, C. Asian deserts, S. Russia.

Remarks: The species is rather common in the Lower Volga region and W Kazakhstan. However, the present records are the first ones from South Ural.

*Ethmia aurifluella* (Hübner, [1810])

Russia, S Ural, 51° 26' N 57° 26' E, 250 m a.s.l., Orenburg district, Kuvandyk village 12 km SE, 14-VI-1998, 1 ♂, T. & K. Nupponen leg.; Russia, S Ural, 51° 22-23' N 56° 48' E, 130-340 m a.s.l., Orenburg district, Donskoje village 4 km W, Verbljushka, 31-V-2004, 1 ♀, K. Nupponen leg.; Russia, S Ural, 54° 28' N 54° 05' E, 200-250 m a.s.l., Bashkiria, ozero Kandrykul, 30-V-2001, 1 ♂, 1 ♀, K. Nupponen leg.

Distribution: Morocco, S Europe eastwards to S Russia and S Ural, Turkey, Near East, Iran, Turkestan.

*Ethmia soljanikovi* Danilevsky & Zagulajev, 1975

Russia, Altai Mts., 50° 16-20' N 87° 50-55' E, 2500 m a.s.l., Kuraisky hrebet, mountain steppe, 27-VI-2000, 15 ♂♂, 1 ♀, 2-VII-2000, 19 ♂♂, 4-VII-2000, 27 ♂♂, 7 ♀♀, T. & K. Nupponen leg.; Ibidem, 6-VII-2001, 3 ♂♂, 2 ♀♀, 12-VII-2001, 1 ♂, K. Nupponen leg. Two genitalia preparations preserved in glycerol.

Distribution: Mongolia, Russia (Altai Mts., Tuva Rep.).

Remarks: The moths were swept from low vegetation in the daytime. The species is rather common at high altitudes in the mountain steppes of the Kurai range, the Altai Mts.

*Ethmia pyrausta* (Pallas, 1771)

Russia, S Ural, 55° 01' N 60° 06' E, 350 m a.s.l., Cheliabinsk district, Miass, Ilmen State Reserve, forest steppe, 25-V-1998, 1 ♂, T. & K. Nupponen leg.; Ibidem, 18-V-1999, 1 ♂, K. Nupponen leg.

Distribution: China (Kuldzha), Estonia, Finland, Latvia, Lithuania, Mongolia (Ulan-Bator), Russia (sporadically in the hemiboreal zone, from Karelia eastwards to the Baikal region), Scotland, Sweden.

*Ethmia discrepita* (Rebel, 1901)

Russia, S Ural, 50° 40-41' N 54° 27-28' E, 170-230 m a.s.l., Orenburg district, Pokrovka village 20 km S, Schibendy valley, 2-V-2003, 1 ♂, 9-V-2005, 7 ♂♂, 10-V-2005, 11 ♂♂, 11-V-2005, 1 ♂, K. Nupponen leg.; Russia, S Ural, 51° 22-23' N 56° 48' E, 130-340 m a.s.l., Orenburg district, Donskoje village 4 km W, Verbljushka, 8-V-2005, 1 ♂, K. Nupponen leg. Genitalia slide: K. Nupponen prep. no. 1/18-I-2014.

Distribution: Russia (S Ural, Saratov region, Altaisky Kraj).

Remarks: The moths were swept from *Thalictrum minus* in the moonlight between 9 and 10 a.m. The habitat in Schibendy valley is chalk steppe, where *Thalictrum* occurs on lush northern slopes. For further notes on *E. discrepita*, see SHOYKOON (2008).

*Ethmia cirrhocnemis* (Lederer, 1870)

Russia, Altai Mts., 50° 15' N 87° 51' E, 1600 m a.s.l., Kurai steppe, 27-VI-2000, 1 ♀, T. & K. Nupponen leg.; Russia, Altai Mts., 50° 16-20' N 87° 50-55' E, 2000 m a.s.l., Kuraisky hrebet, mountain steppe, 28-VI-2000, 3 ♂♂, 1 ♀, T. & K. Nupponen leg.; Ibidem, 2500 m a.s.l., 13-VII-2001, 5 ♂♂, K. Nupponen leg.

Russia, S Buryatia, 51° 11-13' N 106° 10-12' E, 700 m a.s.l., Hamar Daban Mts., Murtoy River, Gusinoe Ozero village 6 km NW, forest steppe, 19-VI-2002, 2 ♂♂, 20-VI-2002, 1 ♀, 27-V-2006, 2 ♂♂, 1 ♀, 4-VI-2006, 2 ♂♂, K. Nupponen leg.; Russia, S Buryatia, 51° 37' N 106° 46' E, 600 m a.s.l., Hamar Daban Mts., Bolshoi Sanzheevka River, Kharamsha village 2 km W, forest steppe, 27-VI-2002, 1 ♂, K. Nupponen leg.

Distribution: Russia (from N Caucasus and S Ural across S Siberia to Far East), Mongolia, C Asia, Iran, C China.

*Ethmia zaguljaevi* Kostjuk, 1980

Russia, S Ural, 55° 01' N 60° 06' E, 350 m a.s.l., Cheliabinsk district, Miass, Ilmen State Reserve, forest steppe, 25-V-1998, 1 ♀, T. & K. Nupponen leg.; Ibidem, 19-V-1999, 1 ♂, K. Nupponen leg.

Distribution: Russia (Altai Mts., S Ural).

Remarks: The species was hitherto known only by a few specimens from the Altai Mts., S Siberia. The present records are the first ones from the Urals and Europe. Records of *E. chrysopyga* (Zeller, 1844) reported from Miass (OLSCHWANG *et al.*, 2004) refer to *E. zaguljaevi*.

*Ethmia nigripedella* (Erschoff, 1877)

Russia, S Ural, 55° 01' N 60° 06' E, 350 m a.s.l., Cheliabinsk district, Miass, Ilmen State Reserve, forest steppe, 25-V-1998, 1 ♂, T. & K. Nupponen leg.; Ibidem, 19-V-1999, 1 ♂, 21-V-2005, 1 ♀, K. Nupponen leg.; Russia, S Ural, 51° 22-23' N 56° 48' E, 130-340 m a.s.l., Orenburg district, Donskoje village 4 km W, Verbljushka, 13-V-1999, 1 ♂, K. Nupponen leg.; Russia, S Buryatia, 51° 11-13' N 106° 10-12' E, 700 m a.s.l., Hamar Daban Mts., Murtoy River, Gusinoe Ozero village 6 km NW, forest steppe, 27-V-2006, 2 ♂♂, 4-VI-2006, 1 ♂, 3 ♀♀, K. Nupponen leg.

Distribution: China, Japan, Mongolia, Russia (S Siberia from E Altai to Transbaikalia, Amur, Primoriye), Ukraine (Crimea), C Asia.

Remarks: The present records are the first from the Urals.

*Ethmia nigrimaculata* Sattler, 1967

Russia, S Buryatia, 50° 13' N 106° 57' E, 650 m a.s.l., Chikoy valley near Mongolian border, Murochi village 1 km S, sandy steppe, 31-V-2006, 1 ♂, K. Nupponen leg.

Distribution: China (prov. Shanxi), Russia (S Buryatia, Chita district, Tuva rep.), Ukraine (Crimea).

Remarks: The moth was swept from low vegetation in the daytime. The present record is the first one from Buryatia.

*Ethmia comitella* Caradja, 1927

Russia, S Buryatia, 51° 11-13' N 106° 10-12' E, 700 m a.s.l., Hamar Daban Mts., Murtoy River, Gusinoe Ozero village 6 km NW, forest steppe, 27-V-2006, 3 ♂♂, 1 ♀, 4-VI-2006, 12 ♂♂, 11 ♀♀, K. Nupponen leg.

Distribution: China, S Korea, Russia (S Buryatia, Chita district, Krasnojarsk district, Tuva rep.).

Remarks: The moths were swept on a rocky steppe slope in the daytime. The present records are the first ones from Buryatia.

*Ethmia uhsensis* Zagulajev, 1975

Russia, S Buryatia, 51° 28' N 106° 33' E, 600 m a.s.l., Gusinozersk village 5 km NNE, Lake Solyonoye, salt marsh/steppe, 26-VI-2002, 1 ♂, K. Nupponen leg.; Russia, S Buryatia, 51° 37' N 106° 46' E, 600 m a.s.l., Hamar Daban Mts., Bolshoi Sanzheevka River, Kharamsha village 2 km W, forest steppe, 27-VI-2002, 2 ♂♂, K. Nupponen leg.

Distribution: Mongolia, Russia (S Buryatia, Chita district, Tuva rep.).

Remarks: The moths came to artificial light at night. The present records are the first ones from Buryatia.

*Ethmia ultima* Sattler, 1967

Russia, Altai Mts., 50° 15' N 87° 51' E, 1600 m a.s.l., Kurai steppe, 27-VI-2000, 1 ♂, T. & K. Nupponen leg.

Distribution: Mongolia, Russia (Altai Mts., Transbaikalia, Tuva rep.).

Remarks: The moth came to artificial light at night. The present record is the first one from the Altai range.

## Acknowledgements

I thank Pavel Gorbunov (Ekaterinburg, Russia) and Vladimir Olschwang (Ekaterinburg, Russia) for organizing the expeditions to Kazakhstan and Russia; Aleksander Pototski (Tallinn, Estonia) for organizing the expedition to Uzbekistan; staff of Ustyurt Nature Reserve for their hospitality and support during our visit; Risto Haverinen (Vantaa, Finland), Alexander Ivanov (Ekaterinburg, Russia), Elena Nupponen (Espoo, Finland) and Timo Nupponen (Espoo, Finland) for various kinds of help and support; Marko Mutanen (University of Oulu, Finland) for analyzing the DNA samples; Lauri Kaila (Helsinki, Finland) and Kimmo Silvonen (Espoo, Finland) for their help in processing the photographs.

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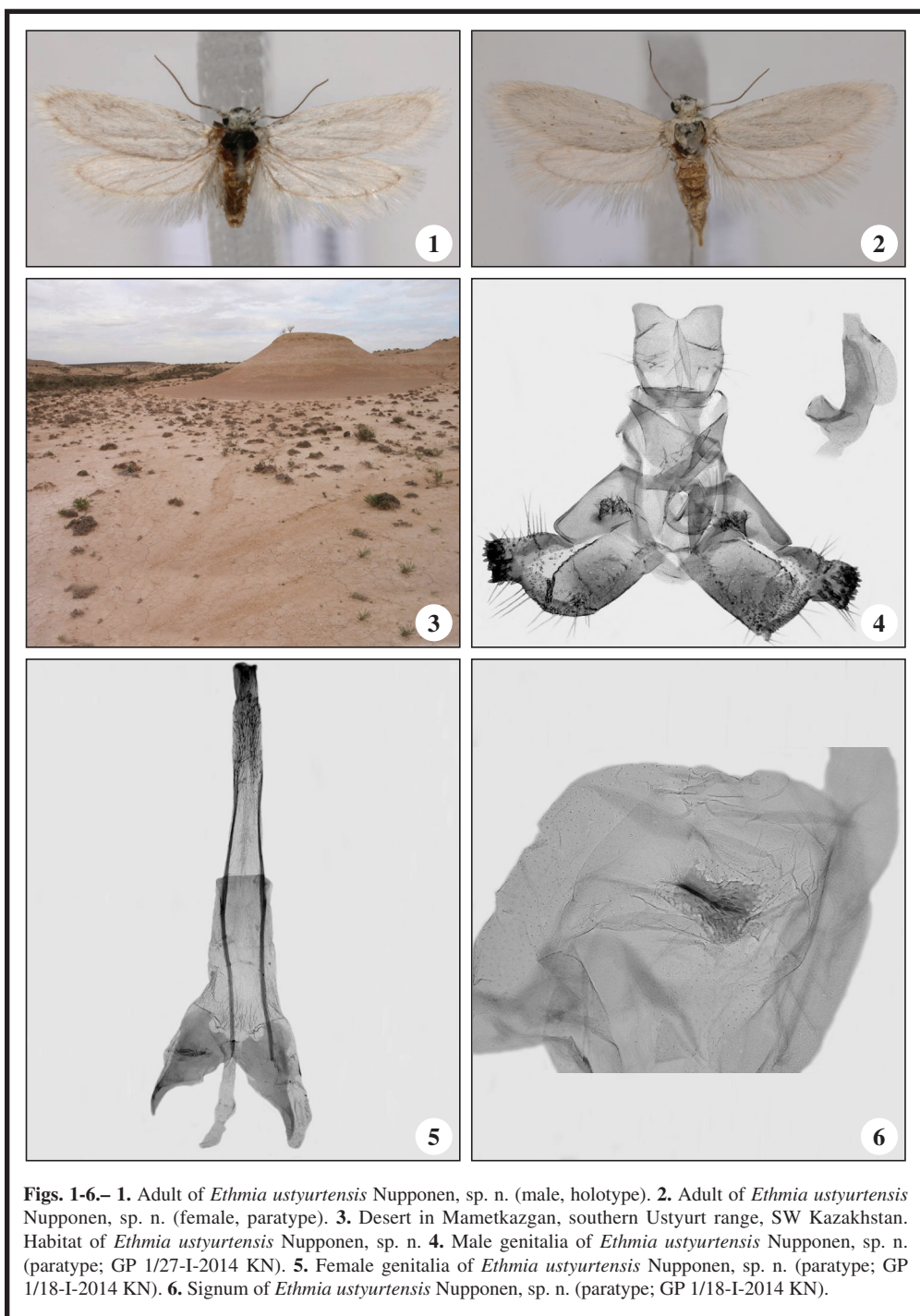
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(Recibido para la publicación / Received for publication 1-II-2014)

(Revisado y aceptado / Revised and accepted 23-III-2014)

(Publicado / Published 30-III-2015)





**Figs. 1-6.**– 1. Adult of *Ethmia ustyurtensis* Nupponen, sp. n. (male, holotype). 2. Adult of *Ethmia ustyurtensis* Nupponen, sp. n. (female, paratype). 3. Desert in Mametkazgan, southern Ustyurt range, SW Kazakhstan. Habitat of *Ethmia ustyurtensis* Nupponen, sp. n. 4. Male genitalia of *Ethmia ustyurtensis* Nupponen, sp. n. (paratype; GP 1/27-I-2014 KN). 5. Female genitalia of *Ethmia ustyurtensis* Nupponen, sp. n. (paratype; GP 1/18-I-2014 KN). 6. Signum of *Ethmia ustyurtensis* Nupponen, sp. n. (paratype; GP 1/18-I-2014 KN).